



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/648,114	08/25/2003	Srikanth Rengarajan	42P17135	3148

8791 7590 06/16/2005

BLAKELY SOKOLOFF TAYLOR & ZAFMAN  
12400 WILSHIRE BOULEVARD  
SEVENTH FLOOR  
LOS ANGELES, CA 90025-1030

EXAMINER

HUYNH, KIM T

ART UNIT	PAPER NUMBER
----------	--------------

2112

DATE MAILED: 06/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/648,114	<b>Applicant(s)</b> RENGARAJAN, SRIKANTH	
	<b>Examiner</b> Kim T. Huynh	<b>Art Unit</b> 2112	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 25 August 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-10, 12-13, 15-17, 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Hewitt et al. (US Patent 5,956,493)

As per claim 1, Hewitt discloses an apparatus, comprising:

- a bus to facilitate data transfers between clients; and (fig.1, 120 ie pci bus), (col.1, lines 8-12)
- an arbiter (fig.1, 180 ie arbiter, col.4, lines 11-22) coupled to the bus to grant bus access to one of the clients at a time based on a programmable priority assigned to at least some of the clients and on an age of an ungranted bus request. (col.2, lines 19-46)

As per claim 2, Hewitt discloses wherein the clients include master clients and target clients, wherein the arbiter is to alternate granting bus access to a requesting one of the master clients and a requesting one of the target clients. (col.1, lines 37-46, wherein round-robin implies alternating granting access)

As per claims 3, 15, 20, Hewitt discloses wherein the arbiter is to grant bus

access to a requesting one of the target clients based on round-robin arbitration.  
(col.1, lines 37-46)

As per claim 4, Hewitt discloses wherein the arbiter is to grant bus access to a requesting one of the master clients based at least partly on hierarchical arbitration. (col.2, lines 31-34, ie configured to vary the level of arbitration priority is implies hierarchical)

As per claim 5, Hewitt discloses wherein the arbiter comprises a programmable storage structure to store the programmable priority. (col.2, lines 37-43)

As per claim 6, Hewitt discloses wherein:

- the age is indicated by a number of clock cycles since the ungranted bus request; and (col.4, lines 45-53)
- the arbiter comprises logic to contain an indicator of the number of clock cycles. (col.2, lines 20-28)

As per claim 7, Hewitt discloses wherein:

- the age is indicated by an elapsed time since the ungranted bus request; and (col.2, lines 26-31)
- the arbiter comprises logic to contain an indicator of the elapsed time.  
(col.2, lines 26-31)

As per claim 8, Hewitt discloses wherein the bus is to use a split-transaction data transfer protocol. (col.19-23)

As per claim 9, Hewitt discloses wherein the arbiter comprises a centralized arbiter. (fig.1, 180, ie bus arbiter, col.3, lines 61-66)

As per claim 10, Hewitt discloses a method, comprising: determining which pending bus requests from clients have a highest programmable hierarchical priority and a greatest time interval since requesting access to a bus, based on an algorithm; and granting access to the bus based on said determining. (col.2, lines 19-47)

As per claim 12, Hewitt discloses the method further comprising granting bus access based on existence of at least one special condition prior to granting bus access based on said determining. (col.2, lines 43-47, ie based upon the length of time is special condition)

As per claim 13, Hewitt discloses wherein said determining further comprises determining priority based on order of physical connection among the clients, responsive to multiple clients having the highest programmable hierarchical priority and the greatest time interval since requesting access to the bus based

on the algorithm. (col.2, lines 19-47)

As per claim 16, Hewitt discloses a system, comprising:

- a bus to transfer data between clients; (col.1, lines 8-12)
- a volatile memory coupled to the bus; and (col.4, lines 45-53)
- an arbiter coupled to the bus to arbitrate pending bus requests from a first type of the clients based on a programmable hierarchical ranking of the first type of the clients and on a time interval indicating how long each of the bus requests has been pending. (col.2, lines 19-47)

As per claim 17, Hewitt discloses wherein the arbiter is to consider the time interval only when multiple ones of the pending bus requests have a same highest programmable hierarchical ranking. (col.2, lines 19-47)

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 11, 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hewitt et al. (US Patent 5,956,493) in view of Chen et al. (US Patent 5,546,548)

Hewitt discloses all the limitations as above except wherein the arbiter is to give priority to retried bus requests before the pending bus requests based on the hierarchical ranking and the time interval. However, Chen discloses the arbiter configured to minimize retry. The priority is modified to its predetermined priority such that subsequent retries will be attempted and subsequently granted. A retry be timed and permitting a subsequent retry to be initiated. (col.4, lines 18-43)

It would have been obvious to one having ordinary skills in the art at the time the invention was made to incorporate Chen's teaching into Hewitt's system so as to permit flexible prioritization of access to a bus. (col.9-11)

5. Claims 14, 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hewitt et al. (US Patent 5,956,493) in view of Jarmillo (US Patent 6,088,751)

Hewitt discloses all the limitations as above except wherein: the first type of clients are master clients; a second type of clients are target clients; and the arbiter is to arbitrate bus requests from the target clients separately from arbitrating the bus requests from the master clients. However, Jarmillo discloses initiator agent communicate with target agent and each of the PCI agents

independently request the bus ownership. Arbiter arbitrates between these requests to determine which will be granted. (col.1, line 66-col.2, line 11)

It would have been obvious to one having ordinary skills in the art at the time the invention was made to incorporate Jarmillo's teaching into Hewitt's system so as to have variety of arbitration priority schemes in multiple computer systems. (col.1, lines 5-11)

### **Conclusion**

6. *Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kim Huynh whose telephone number is (571)272-3635 or via e-mail addressed to [kim.huynh3@uspto.gov]. The examiner can normally be reached on M-F 9:00AM- 6:00PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Rinehart can be reached at (571)272-3632 or via e-mail addressed to [mark.Rinehart@uspto.gov].*

*The fax phone numbers for the organization where this application or proceeding is assigned are (703)872-9306 for regular communications and After Final communications. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571)272-2100.*

Kim Huynh

June 7, 2005



**TIM VO**  
**PRIMARY EXAMINER**